What is claimed is:

1. A matrix reordering method for reordering elements of a coefficient matrix whose structure corresponds to coefficients of linear simultaneous equations whose solutions are to be produced by parallel processing of processors of a computer in accordance with Gaussian elimination, said matrix reordering method comprising the steps of:

based on a number of non-zero elements included in the coefficient matrix and an accumulative processing time of the Gaussian elimination of the coefficient matrix, determining a first combination of row and column and a second combination of row and column, which are selected from among rows and columns of the coefficient matrix; and

performing replacement of elements between the first combination of row and column and the second combination of row and column within the coefficient matrix.

2. A matrix reordering method for reordering elements of a coefficient matrix whose structure corresponds to coefficients of linear simultaneous equations whose solutions are to be produced by parallel processing of processors of a computer in accordance with Gaussian elimination, said matrix reordering method comprising the steps of:

based on a number of non-zero elements included in the coefficient matrix and lengths of critical paths created by the Gaussian elimination of the coefficient matrix, determining a first combination of row and column and a second combination of row and column, which are selected from among rows and columns of the coefficient matrix; and

performing replacement of elements between the first combination of row and column and the second combination of row and column within the coefficient matrix.

3. A matrix reordering method according to claim 1 or 2 further comprising the step of:

in accordance with a prescribed condition, selectively performing either the replacement of elements between the first and second combinations of rows and columns or secondary replacement of elements between a third combination of row and column and a fourth combination of row and column, which are selected based on symmetry of the coefficient matrix.

4. A matrix reordering method according to claim 3 further comprising the step of:

creating a symmetric coefficient matrix by transposition of a non-symmetric coefficient matrix that is given as the coefficient matrix, so that the secondary replacement is performed on elements of the symmetric coefficient matrix between the third and fourth combinations of rows and columns, which are selected based on symmetry of the symmetric coefficient matrix.

5. A matrix reordering apparatus for reordering elements of a coefficient matrix whose structure corresponds to coefficients of linear simultaneous equations whose solutions are to be produced by parallel processing of processors of a computer in accordance with Gaussian elimination, said matrix reordering apparatus comprising:

a determinator for based on a number of non-zero elements included in the coefficient matrix and an accumulative processing time of the Gaussian elimination of

the coefficient matrix, determining a first combination of row and column and a second combination of row and column, which are selected from among rows and columns of the coefficient matrix; and

a replacer for performing replacement of elements between the first combination of row and column and the second combination of row and column within the coefficient matrix.

6. A matrix reordering apparatus for reordering elements of a coefficient matrix whose structure corresponds to coefficients of linear simultaneous equations whose solutions are to be produced by parallel processing of processors of a computer in accordance with Gaussian elimination, said matrix reordering apparatus comprising:

a determinator for based on a number of non-zero elements included in the coefficient matrix and lengths of critical paths created by the Gaussian elimination of the coefficient matrix, determining a first combination of row and column and a second combination of row and column, which are selected from among rows and columns of the coefficient matrix; and

a replacer for performing replacement of elements between the first combination of row and column and the second combination of row and column within the coefficient matrix.

7. An electronic circuit simulation method using matrix reordering for reordering elements of a coefficient matrix that represents electronic elements of a given electronic circuit by linear simultaneous equations whose solutions are to be produced by parallel processing of processors of a computer in accordance with Gaussian elimination, said electronic circuit simulation method comprising the steps

of:

based on a number of non-zero elements included in the coefficient matrix and an accumulative processing time of the Gaussian elimination of the coefficient matrix, determining a first combination of row and column and a second combination of row and column, which are selected from among rows and columns of the coefficient matrix; and

performing replacement of elements between the first combination of row and column and the second combination of row and column within the coefficient matrix.

8. An electronic circuit simulation method using matrix reordering for reordering elements of a coefficient matrix that represents electronic elements of a given electronic circuit by linear simultaneous equations whose solutions are to be produced by parallel processing of processors of a computer in accordance with Gaussian elimination, said electronic circuit simulation method comprising the steps of:

based on a number of non-zero elements included in the coefficient matrix and lengths of critical paths created by the Gaussian elimination of the coefficient matrix, determining a first combination of row and column and a second combination of row and column, which are selected from among rows and columns of the coefficient matrix; and

performing replacement of elements between the first combination of row and column and the second combination of row and column within the coefficient matrix.

9. An electronic circuit simulation method according to claim 7 or 8 further comprising the step of:

in accordance with a prescribed condition, selectively performing either the replacement of elements between the first and second combinations of rows and columns or secondary replacement of elements between a third combination of row and column and a fourth combination of row and column, which are selected based on symmetry of the coefficient matrix.

10. An electronic circuit simulation method according to claim 9 further comprising the step of:

creating a symmetric coefficient matrix by transposition of a non-symmetric coefficient matrix that is given as the coefficient matrix, so that the secondary replacement is performed on elements of the symmetric coefficient matrix between the third and fourth combinations of rows and columns, which are selected based on symmetry of the symmetric coefficient matrix.

11. An electronic circuit simulation apparatus using matrix reordering for reordering elements of a coefficient matrix that represents electronic elements of a given electronic circuit by linear simultaneous equations whose solutions are to be produced by parallel processing of processors of a computer in accordance with Gaussian elimination, said electronic circuit simulation apparatus comprising:

a determinator for based on a number of non-zero elements included in the coefficient matrix and an accumulative processing time of the Gaussian elimination of the coefficient matrix, determining a first combination of row and column and a second combination of row and column, which are selected from among rows and columns of the coefficient matrix; and

a replacer for performing replacement of elements between the first

combination of row and column and the second combination of row and column within the coefficient matrix.

12. An electronic circuit simulation apparatus using matrix reordering for reordering elements of a coefficient matrix that represents electronic elements of a given electronic circuit by linear simultaneous equations whose solutions are to be produced by parallel processing of processors of a computer in accordance with Gaussian elimination, said electronic circuit simulation apparatus comprising the steps of:

a determinator for based on a number of non-zero elements included in the coefficient matrix and lengths of critical paths created by the Gaussian elimination of the coefficient matrix, determining a first combination of row and column and a second combination of row and column, which are selected from among rows and columns of the coefficient matrix; and

a replacer for performing replacement of elements between the first combination of row and column and the second combination of row and column within the coefficient matrix.

13. A matrix reordering method for reordering elements of a coefficient matrix created based on coefficients of linear simultaneous equations whose solutions are to be produced by parallel processing of processors of a computer in accordance with Gaussian elimination, said matrix reordering method comprising the steps of:

selecting from among pivots included in the coefficient matrix a first pivot whose degree corresponding to a number of non-zero elements is under a threshold;

selecting from among the pivots included in the coefficient matrix a second

pivot whose critical path length is minimum;

performing replacement of elements between the first pivot and the second pivot within the coefficient matrix; and

adding new non-zero elements, which are newly produced by the Gaussian elimination of the first pivot, to the coefficient matrix.

14. A matrix reordering method according to claim 13 further comprising the step of:

performing reordering of a partial matrix whose elements are not eliminated and are selected from among the elements of the coefficient matrix in accordance with a nested dissection method, so that non-zero elements, which are newly produced by the Gaussian elimination of the partial matrix, are added to the coefficient matrix.

15. A matrix reordering method according to claim 14 further comprising the step of:

creating a symmetric coefficient matrix by transposition of a non-symmetric coefficient matrix that is given as the coefficient matrix, so that the reordering is performed on the symmetric coefficient matrix.

16. A matrix reordering method according to claim 14 wherein the reordering is started if a degree or a parameter of the first pivot is under a threshold.